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(71) Applicant (for all designated States except US): UNIVER-SITY OF LEEDS [—/GB]; Leeds LS2 9JT (GB).

(72) Inventors; and

(75) Inventors/Applicants (for US only): SEEDHOM, Bahaa [GB/GB]; Roundabout Farm, Padside, Summerbridge HG3 4AL (GB). TOYODA, Takashi [JP/GB]; 5-15-21 Minamishinagawa, Shinagawa-ku, Tokyo 140-0004 (JP). PULLAN, Michael [GB/GB]; 14 Sherbrooke Avenue, Leeds LS15 OLS (GB).

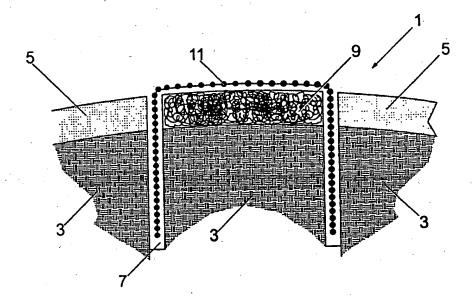
(74) Agent: HARRISON GODDARD FOOTE; Tower House, Merrion Way, Leeds LS2 8PA (GB).

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[Continued on next page]

(54) Title: REPAIR OF DAMAGED TISSUE



(57) Abstract: The invention relates to a method for the repair of damaged tissue present at or on the surface (5, 27) of bone in an animal, the method comprising forming a narrow groove (7, 25) around at least part of said damaged tissue, which groove extends (7, 25) into the bone (3, 29) below the damaged tissue, replacing the tissue around which the groove (7, 25) extends by at least one layer of biocompatible replacement material (9), and anchoring the material (9) to the bone (3, 29) by the use of retaining means (11) extending from the material (9) into the groove (7, 25); instruments for use in the repair of damaged tissue and kits comprising said instruments.

01/39694



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inter. .onal Application No PCT/GB 00/04624

a. classification of subject matter IPC 7 A61B17/16 A61B A61F2/28 A61F2/30 A61F2/46 A61B17/32 A61L27/00 According to International Patent Classification (IPC) or to both national classification and IPC B. FIELDS SEARCHED Minimum documentation searched (classification system followed by classification symbols) A61B A61F IPC 7 Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched Electronic data base consulted during the international search (name of data base and, where practical, search terms used) EPO-Internal C. DOCUMENTS CONSIDERED TO BE RELEVANT Relevant to claim No. Citation of document, with indication, where appropriate, of the relevant passages 18-20 ÚS 5 782 835 A (HART) χ 21 July 1998 (1998-07-21) 21-25, the whole document 28, 29, 40 34,35 Α 21,23 US 5 535 756 A (PARASHER) 16 July 1996 (1996-07-16) the whole document 22 GB 638 892 A (ALFORD) 14 June 1950 (1950-06-14) the whole document 24 WO 96 24302 A (SCHWARTZ) 15 August 1996 (1996-08-15) 18,34, the whole document 35,39,40 Patent family members are listed in annex. Further documents are listed in the continuation of box C. Special categories of cited documents: *T* later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the *A* document defining the general state of the art which is not considered to be of particular relevance invention "X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone earlier document but published on or after the international filing date document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified) document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled *O* document referring to an oral disclosure, use, exhibition or document published prior to the international filing date but later than the priority date claimed '&' document member of the same patent family Date of mailing of the international search report Date of the actual completion of the international search 0 3. 10. 2001 21 September 2001 Authorized officer Name and mailing address of the ISA European Patent Office, P.B. 5818 Patentlaan 2 NL - 2280 HV Rijswijk Tel. (+31-70) 340-2040, Tx. 31 651 epo nl, Klein, C Fax: (+31-70) 340-3016

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Inten anal Application No PCT/GB 00/04624

C.(Continua	tion) DOCUMENTS CONSIDERED TO BE RELEVANT		Relevant to claim No.	
Category *	Citation of document, with indication,where appropriate, of the relevant passages		restant to Califf 140.	
P,Y	US 6 080 176 A (YOUNG) 27 June 2000 (2000-06-27) the whole document		28,29	
X	DE 195 03 504 A (METRIMED ORVOSI MÜSZERGYÁRTÓ) 21 March 1996 (1996-03-21)		18-20 25	
A	the whole document			
Χ .	WO 96 24304 A (THE HOSPITAL FOR JOINT DISEASES, ORTHOPAEDIC INSTITUTE) 15 August 1996 (1996-08-15)	34,35, 37–39		
Y	the whole document		25,40	
X	US 5 067 964 A (RICHMOND) 26 November 1991 (1991-11-26)		34-36,39 37,38	
Y	the whole document	4		
Y	DE 198 03 673 A (MEENEN) 5 August 1999 (1999-08-05) column 7; figure 2; example 2		37,38	
A	EP 0 228 752 A (FUTURA NOVA) 15 July 1987 (1987-07-15) the whole document		23	
Α	US 5 964 805 A (STONE) 12 October 1999 (1999-10-12)			
A	WO 98 34569 A (SMITH & NEPHEW) 13 August 1998 (1998-08-13)			
Α .	US 4 649 918 A (PEGG) 17 March 1987 (1987-03-17)			
A	WO 93 07819 A (ELIAS) 29 April 1993 (1993-04-29)			
A	WO 98 08469 A (VTS HOLDINGS) 5 March 1998 (1998-03-05)			
A	WO 97 46665 A (SULZER ORTHOPEDICS) 11 December 1997 (1997-12-11)			
A	DE 43 17 448 A (GROSS) 24 November 1994 (1994-11-24)	· <u>-</u>		
A	WO 94 09722 A (THM BIOMEDICAL) 11 May 1994 (1994-05-11)	. •		
A	EP 0 505 634 A (KYOCERA CORPORATION) 30 September 1992 (1992-09-30)			
1			, ,	

International application No. PCT/GB 00/04624

INTERNATIONAL SEARCH REPORT

Box I	Observations where certain claims were found unsearchable (Continuation of item 1 of first sheet)
This Inte	ernational Search Report has not been established in respect of certain claims under Article 17(2)(a) for the following reasons:
1. X	Claims Nos.: 1–17, 42 because they relate to subject matter not required to be searched by this Authority, namely:
•	Rule 39.1(iv) PCT - Method for treatment of the human or animal body by surgery
2.	Claims Nos.: because they relate to parts of the International Application that do not comply with the prescribed requirements to such an extent that no meaningful International Search can be carried out, specifically:
3.	Claims Nos.: because they are dependent claims and are not drafted in accordance with the second and third sentences of Rule 6.4(a).
	(Outline of item 2 of first sheet)
Box II	Observations where unity of invention is lacking (Continuation of item 2 of first sheet)
This Int	ernational Searching Authority found multiple inventions in this international application, as follows:
	see additional sheet
1. X	As all required additional search fees were timely paid by the applicant, this International Search Report covers all searchable claims.
·	
2.	As all searchable claims could be searched without effort justifying an additional fee, this Authority did not invite payment of any additional fee.
	Coareh Popert
3.	As only some of the required additional search fees were timely paid by the applicant, this International Search Report covers only those claims for which fees were paid, specifically claims Nos.:
4.	No required additional search fees were timely paid by the applicant. Consequently, this International Search Report is restricted to the invention first mentioned in the claims; it is covered by claims Nos.:
Rema	The additional search fees were accompanied by the applicant's protest.
	No protest accompanied the payment of additional search fees.

FURTHER INFORMATION CONTINUED FROM PCT/ISA/ 210

This International Searching Authority found multiple (groups of) inventions in this international application, as follows:

1. Claims: 18-33

A set of instruments for repairing damaged tissue at or on the bone surface comprising: - means for forming a narrow groove around said damaged tissue; - means for removing said damaged tissue from the space inside said groove; - means for anchoring replacement material retaining means inside said space.

2. Claims: 34-41

A replacement element, and a replacement kit, for repairing damaged tissue at or on the bone surface comprising: — a pad of bio-compatible material shaped and sized to occupy a site from which said damaged tissue has been removed.

Information on patent family members

PCT/GB 00/04624

					. [[CI/UD	00/04024	
	ent document n search report		Publication date		Patent family member(s)		Publication date	
	700005		21 07 1009	AU -	712301	R2 ·	04-11-1999	
us :	5782835	. А	21-07-1998		4922296		23-09-1996	
			٠,	AU			07-01-1998	
		•		EP	0814710			
				JP ·	11501239		02-02-1999	
				WO	9627333	A1	12-09-1996	
				US	6017348		25-01-2000	
US!	 5535756	Α	16-07-1996	US	5738109	A	14-04-1998	
GB (638892	Α	14-06-1950	NONE				
WO '	9624302	A	15-08-1996	WO	9725942		24-07-1997	
				US	5632745		27-05-1997	
				ΑU	697372	B2 -	01-10-1998	
				AU	4855996	Α	11-08-1997	
	•			CA	2212544		15-08-1996	
		•		EP	0808136		26-11-1997	
					0814731		07-01-1998	
			•	EP			10-10-2000	
				JP	2000513240			
	• .	•		WO	9624302	Al ·	15-08-1996	
	•			ΑU	694838		30-07-1998	
				ΑU	4693396		27-08-1996	
				JP	10504217		28-04-1998	
			-	US	5769899		23-06-1998	
					5749874		12-05-1998	
				US 	9/470/4 			
US	6080176	A	27-06-2000	NONE				
DE	19503504	Α	21-03-1996	HU	76105	A2	30-06-1997	
υĽ	13303304		21 00 1990	DE	19503504	A1	21-03-1996	
110	9624304	A	15-08-1996	US	5713374	Α	03-02-1998	
WU	JU243U4	Α.	10 00 1000	AU	710212		16-09-1999	
			•	AU	4975696		27-08-1996	
	•						15-08-1996	
				CA	2212641			
			*	- EP	0808137		26-11-1997	
				JP	10513387		22-12-1998	
		•		WO	9624304	A1	15-08-1996	
US	5067964	Α	26-11-1991	EP	0528080) A1	24-02-1993	
DF	19803673	 . А	05-08-1999	DE	19803673		05-08-1999	
		. **	4	EP	0934750) A2-	11-08-1999	
٠.		*		JP	11267193	3 A	05-10-1999	
 [D	228752	 A	15-07-1987	NL	850359	5 A	16-07-1987	
		^,		AT	5782		15-11-1990	
				ΑÜ	58846		14-09-1989	
				ΑŬ	733908		08-12-1988	
		•			126809	,	24-04-1990	
				CA			06-12-1990	
				DE	367536		15-07-1987	
				EP US	022875 470071		20-10-1987	
	5964805	A	12-10-1999	US	611020		29-08-2000	
US							14-11-2000	
			12_00 1000	110	61 <i>1</i> 638	7 H	14-11-2000	
	9834569	Α	13-08-1998	US	614638	3 A	14-11-2000	

Information on patent family members

International Application No
PCT/GB 00/04624

		-				
	Patent document ted in search report		Publication date		Patent family member(s)	Publication date
1.1	0 0034560	A		AU	6275298 A	26-08-1998
W	0 9834569	A.		EP	1006957 A1	14-06-2000
				wo	9834569 A1	13-08-1998
U	IS 4649918	Α	17-03-1987	NONE		
			29-04-1993	US	5324300 A	28-06-1994
W	10 9307819	A	29-04-1993	CA	2099287 A1	26-04-1993
	•			DE	69224057 D1	19-02-1998
	•			DE	69224057 T2	27-08-1998
				EP	0564630 A1	13-10-1993
			_	ES.	2114571 T3	01-06-1998
*				WO	9307819, A2	29-04-1993
						02-06-1998
- 1	10 9808469	Α	05-03-1998	US	5759190 A 5989269 A	23-11-1999
	,			US	731162 B2	22-03-2001
				AU -	4171097 A	19-03-1998
				AU BR	9711967 A	18-01-2000
	•				1006950 A2	14-06-2000
				EP -	0002980 A2	29-01-2001
	•			HU	990933 A	26-02-1999
			•	NO PL	331834 A1	02-08-1999
				TR	9900437 T2	21-05-1999
				US	6120514 A	19-09-2000
			•	WO US	9808469 A2	05-03-1998
				US	6283980 B1	04-09-2001
•						11-12-1997
1	WO 9746665	Α	11-12-1997	MO	9746665 A1	16-06-1999
				EP	0922093 A1	10-10-2000
				JP	2000513214 T	05-06-2001
•				US	6242247 B1	16-08-2001
,				US 	2001014473 A1	
	DE 4317448	Α	24-11-1994	DE	4317448 A1	24-11-1994
				AU	6792994 A	12-12-1994
	•		·	WO	9426211 A1	24-11-1994
	WO 9409722	Α	11-05-1994	AU	5445794 A	24-05-1994
	,			BR	9307280 A	01-06-1999
				GB	2215209 A ,B	20-09-1989
	•			JP	1232967 A	18-09-1989
				JP	2820415 B2	05-11-1998
	•		• .	WO	9409722 A1	11-05-1994
				US	5683459 A	04-11-1997
			•	US	5904717 A	18-05-1999
			•	US	6005161 A	21-12-1999
			-	US	5755792 A	26-05-1998 28-07-1992
				US	5133755 A	28-07-1992 22-11-1994
				US	5366508 A	
	EP 505634	Α	30-09-1992	JP	3007903 B2	14-02-2000
	L1 303034	7	30 33 1332	JP	4303444 A	27-10-1992
				DE	69127354 D1	25-09-1997
				DE	69127354 T2	22-01-1998
					0505634 A1	30-09-1992
				EP US	0505634 A1 5458643 A 5314478 A	30-09-1992 17-10-1995 24-05-1994